

System and method for product display, arrangement and rotation

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RELATED APPLICATIONS

5 This application is a continuation in part of United States patent applications No. 10/392,162 filed March 18, 2003, and claims priority from that application.

This application is related to United States provisional patent applications No. 60/290969 filed on May 14, 2002; No. 60/292441 filed on May 19, 2002; and No. 60/400976 filed on July 28, 2002; and claims priority from those applications.

BACKGROUND OF THE INVENTION

1. Field of the Invention

10 The invention relates to the display, arrangement and rotation of products such as those packaged in bottles, jars, cans, and boxes, and more particularly to an improved product display, arrangement and rotation system and method in which products displayed on a display shelf can
15 easily be arranged or rotated to have the products' expiration dates kept safely up to date and to conveniently position the products manually near the front edge of the shelves for improved visual exposure and effortless selection by consumers.

2. Description of Related Art

20 Retail stores relying on the consumers to serve themselves have recognized the importance of displaying products near the front edge of display shelves so that the products can be readily seen by consumers and easily reached by the consumers. Customers typically remove products from the front of a display shelf, and products remaining toward the rear of display

shelves are often difficult to reach.

Well operated retail stores have clerks move around the store periodically to check the status of goods and to make appropriate corrections by moving products toward the front of display shelves. There is a need to make this alignment process more efficient.

5 The prior art provides some examples of automated or semi-automated shelf display alignment.

U.S. Pat. No. 6,155,438 to applicant describes a system and method for product display, arrangement and rotation. That patent includes a relatively fixed side frame which is typically held in place by magnetic attraction, and a pull frame attached to a rear member that is used to
10 pull product forward on a shelf.

The '438 patent discusses prior art including U.S. Pat. No. 5,203,463 to Steven K. Gold which teaches the use of springs to push items to the front position on the display shelf; U.S. Pat. No. 5,240,126 to Foster which also uses a ribbon spring arrangement to advance a row of items forward; U.S. Pat. No. 5,240,125 to Kunz, which is similar to the '126 patent, with the addition
15 of a protective wire grid to prevent a glass jar from falling out of the device; and U.S. Pat. No. 5,123,546 to Crum which also uses a spring mechanism.

Pending U.S. Patent Application Number 09/918,843 filed July 31, 2001 by applicant for "System and method for product display, arrangement and rotation" describes a device, system, and method for manually arranging products on a display with two slide rails which fit into the
20 vacant spaces near the bottom of rounded container sides. In an alternate embodiment, a base is provided to elevate a row of containers, and the slide rails slide underneath the containers in the row. The slide rails may be attached to a rear member which engages the rear of the last product container in the row, and pushes the containers forward as the front member is pulled away from

the display shelf. The device may be a wire frame which may include side covers of various shapes and sizes. One embodiment of that base is a set of overlapping single display rows.

SUMMARY OF THE INVENTION

5 The current invention relates to a device, system and method for displaying products generally forming a queue on a display surface such as a display shelf. Several embodiments of the invention relate to supporting merchandise on a display base.

 In one embodiment, the base has a plurality of closely spaced product support ridges. The support ridges provide a strengthening of the base and provide a support surface for merchandise.
10 The valleys between the support ridges form recesses for the insertion of row dividers to define rows for the merchandise; and the valleys permit pull members to be positioned below merchandise.

 In this invention, the term ridges refers to elevated elements integral to a display base which support merchandise above the base. The base typically rests on a shelf such as in a
15 grocery store. Some of the spaces, or valleys, between adjacent ridges permit pull members to be placed below the merchandise so that merchandise will slide on the ridges above the pull member.

 The ridges may have a variety of cross sectional shapes including triangular, flattened triangular, rounded, rectangular, or stepped. The ridges may include recesses to accept inserted
20 row partitions, or a divider partition may be placed between ridges.

 Row dividers may be provided by the ridges themselves, such as with a stepped ridge, or may be provided by divider partitions inserted into recesses in the ridges or between ridges. In some embodiments, the shape of the ridges is sufficient to separate rows of merchandise without

additional partitions. For many types of merchandise which have rounded or indented profiles in the lower portion of the container, a stepped ridge profile can be selected to fit into the recess formed between adjacent rows of containers, so that row division may be accomplished without requiring the additional shelf width of partition inserts. For retailers such as grocery stores that have precisely defined merchandising plans, this aspect of the invention permits the display base to be adopted without modification to the merchandising scheme.

The display base may be provided as a universal base such as regularly spaced rows, or the rows may be specifically designed to accommodate the actual row widths and profiles of particular merchandise. For example custom bases may be provided for rows of soup cans or jelly jars; or for rows of stacks of baby food jars. Merchandise is not limited to cans and jars, but may include a variety of shapes.

In one embodiment, the rear portion of the ridges may be marked or scored at one-inch intervals so that the base may be bent to a desired shelf depth. The ridges are formed so that every other ridge has a score line at a particular depth. This alternating scoring of the ridges provides a guide for bending the base to a desired width while maintaining a strengthened base.

In one embodiment, the base is cut to a desired depth and the flat rear portion of the removed rear section of the base is typically bent to a 90-degree angle and positioned below the rear of the display base. The ridges and valleys of the upturned rear portion of the base provide vertical support for the rear portion of the row dividers. In this embodiment, a partition divider typically rests in a selected valley with the bottom of the divider positioned in the horizontal portion of the valley, and the rear portion of the divider positioned in at least a portion of a valley on the upturned rear section.

A pull member such as a strap, a rod, a spring coil, or an elastic band may be placed in a

channel formed between ridges. The pull member may be manually pulled outward from the display shelf, or may automatically keep merchandise moved toward the front of the display shelf by constant force such as a spring or elastic band.

Advantages of the current invention include the low cost of the display base, such as provided by thermoforming or vacuum molding the base, efficient packaging, and low shipment cost. The base is also very easy to cut to desired size and to install on a shelf without special tools. The base can typically be cut with scissors or a box knife. The base will work with various display shelf depths, and with various sizes of merchandise including product containers such as cans, bottles, and bags.

In one embodiment, the display base includes a plurality of display rows which each have a pre-determined width to accommodate a specific size of product container. For instance, in the case of soup cans, the base may have a set of rows which are each the same width. In other cases, adjacent rows may have different widths to accommodate different sized containers.

The rows typically have two ridge dividers, one on each side of the row, such that the dividers engage a portion of the lower part of the product containers in order to keep the containers in the row.

In one embodiment, the center of each row has a single recess channel which holds a pull member. The pull member may be a thin plastic strip which is bent upwards at its rear end in order to engage the rear product container in the row. In one embodiment the rear of the pull strap includes a pull plate for engaging the product containers. The front end of pull strap typically protrudes slightly from the front of the display base so that it may be grasped and pulled outward to align the product containers in the row. After alignment, the pull strap is returned to its resting position with the rear of the strap near the rear of the display shelf, and the front of the

pull strap protruding slightly from the front of the shelf. In other embodiments, the pull member may be a rod, bar, or elastic member.

In another embodiment, two recess channels may be provided in a row, and the pull device includes two elongated members which rest in the channel. The rear of the elongated members may be attached to a pull plate to engage the back of the product containers, and the front of the members may be attached to a handle. The product alignment proceeds as in the single channel embodiment by grasping the handle, pulling the handle outwards from the display shelf until the containers are aligned, and returning the handle to its rest position.

Inventory, such as restocking is assisted by observing the length of the pull device, which provides a measure of available display space behind the containers. In this way, the stocker does not need to visually observe the row depth, and the shelf height can be lower than what is required for visual inspection.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1A is a top view of an embodiment of a display base having one pull channel per display row.

FIG. 1B is a detailed top view of the embodiment shown in FIG. 1A.

FIG. 1C is a cross sectional view of two rows of the display base shown in FIG. 1A.

FIG. 1D is a top perspective view of a pull strap.

FIG. 1E is a top view of the depth adjustment area of the display base shown in FIG. 1A.

FIG. 2A is a top view of an embodiment of a display base having ridge product container supports in each display row.

FIG. 2B is a detailed top view of the embodiment shown in FIG. 2A.

FIG. 2C is a cross sectional view of two rows of the display base shown in FIG. 2A.

FIG. 2D is a cross sectional view of another embodiment of two rows of the display base shown in FIG. 2A.

FIG. 2E is a cross sectional view of another pull member embodiment of two rows of the display base shown in FIG. 2A.

Fig. 3A is a top view of an embodiment of a display base having slots for placement of divider wall inserts

Fig. 3B is a detailed top view of the base in Fig. 3A.

Fig. 3C is a cross section view of the embodiment of Fig. 3A.

10 Fig. 4A is a cross section view of an embodiment for baby food jars.

Fig. 4B is a detailed cross section view of the embodiment of Fig. 4A.

Fig. 4C is a cross section view of an embodiment for baby food jars including tall row dividers.

Fig. 4D is a perspective view of stacked containers such as baby food jars.

Fig. 5 is a cross sectional view of a pull strap bent upwards behind a stack of containers.

15 Fig. 6 is a perspective view of a pusher element attached to a pull strap.

Fig. 7 is a perspective view of a display section with front stops.

FIG. 8 is a detailed cross section view of an end stop inserted on a display base.

FIG. 9A is a top perspective view of an embodiment of a display base having a plurality of support ridges with alternating scoring in the rear portion of the base.

20 FIG. 9B is a detailed cross section view of the embodiment shown in FIG. 9A further showing insertion of dividers.

FIG. 9C is a detailed cross sectional view of the rear portion of the display base shown in FIG. 9A showing scoring and alternating notching for depth adjustment.

FIG. 9D is a top perspective view of the display base of FIG. 9A with a rear portion excess removed and attached to the base, with dividers inserted, and with a pull member.

FIG. 9E is a detailed cross section view of the display base of FIG. 9D showing the attachment of the rear portion to the base.

5 FIG. 9F is a detailed cross section view of the display base showing a hinge line.

FIG. 10 is a top perspective view of a display base with pull members, a pusher element, and spring pushers.

FIG. 11A is a perspective view of a pusher element with a spring pull member inserted and engaging the pusher element.

10 FIG. 11B is a cross section view of a pusher element with a spring pull member inserted and engaging the pusher element.

FIG. 11C is a perspective view of a pusher element with a pull member inserted and pushed away from the pusher element.

FIG. 12 is a cross section view of an elastic pull member.

15 FIG. 13A is a top perspective view of the bottom surface of an embodiment of the invention.

FIG. 13B is a detailed top perspective view of a snap feature of a first base unit of the embodiment of FIG. 13A.

FIG. 13C is a detailed top perspective view of a snap feature of a second base unit of the embodiment of FIG. 13A.

20 FIG. 14A is rear perspective view of a front stop element.

FIG. 14B is side view of a front stop element and base unit on a display shelf.

FIG. 15 is a top perspective view of various types of pull devices used with the base unit.

FIG. 16A is a front perspective view of an active alignment device with a spring loaded rear

engagement member.

FIG. 16B is a detailed rear perspective view of the rear engagement member of FIG 16a.

FIG 16C is a detailed side view of the rear engagement member in the device of FIG. 16A.

FIG. 16D is a detailed rear perspective view of the front stop.

5 FIG. 17A is a front perspective view of an active alignment device with an elastic member.

FIG. 18A is a front view of sidewall dividers in a base in a first configuration.

FIG. 18B is a front view of sidewall dividers in a base in a second configuration.

FIG. 18C is a front view of sidewall dividers in a base in a third configuration.

FIG. 18D is a detailed view of a sidewall divider showing an offset.

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DETAILED DESCRIPTION OF EMBODIMENT – Display base and pull straps for grocery display

Referring now to Fig. 1A which is a top view of an embodiment of the current invention, several containers **80a- 80i**, such as soup cans are placed in one row **50** of a display base **10**.

15 Alternate embodiments support other sizes of cans, boxes, bags, and loose merchandise.

In this embodiment, the base may be a plastic sheet which may be bent or scored along one of several depth adjustment lines **91-97** at the rear of the base. This permits the base to be sized for standard grocery store shelf depths of 18, 19, 20, 21, 22, 23, or 24 inches. The rear of the base may be either bent up or may be bent and scored or cut to remove the excess material.

20 The bending is typically performed by laying the base upside down and backwards on a shelf so that the base may be bent at an appropriate bend line. After bending, the extra base material may be left in a bent position or may be removed such as by cutting it off with a box blade.

The channel **40** is defined by the lower portion of the portion of the base **10** which lies between the support ridges **30**. Each row **50** of the base **10** is defined by a row ridge divider **20** on either side the rows. The divider may be separated from the support ridge as shown in Fig 1B, or the divider may be integral to the support ridge.

5 Referring now to Fig. 1B, which is a detailed top view of one side of a row and an adjacent row, the ridge divider **20** may be pyramidal in shape, and the support ridges **30** are raised from the floor of the base.

Referring now to Fig. 1C, which is a cross sectional view of two rows of the base, the ridge dividers **20** are shown as triangular cross sections having a angle of approximately 25° from the vertical line bisecting the ridge divider, so that the top angle of the ridge dividers is about 50° . The ridges **30** are typically raised about $1/8''$ above the top of the channel **40**. The ridge dividers have an additional height of about $5/16''$ above the ridge height, for a total height of about $9/16''$. In this case the rows are sized for soup can containers **80a** and **80b** and have a distance between the ridge divider peaks of $2\ 5/8''$. In this embodiment, each row further

15 comprises a ridge **30** on each side of the row. The ridges **30** form a channel **40** which is used to support a pull strap **200**. The channel **40** permits a pull member such as a pull strap to rest underneath the product containers **80a- 80b** until the front of the pull member is grasped and pulled away from the shelf in order to bring the rearmost containers forward and align the containers toward the front of the shelf on the display base **10**.

20 Referring now to Fig. 1D, which is a top perspective view of a pull strap **200**, the pull strap is typically about 26 inches long, and may be cut to a shorter length. It is typically fabricated of a plastic material in a color similar or complimentary to the color of the base. The front end **201** of the pull strap may be bent upward to provide a grasping point in order to pull the

strap forward. Typically, the rear of the pull strap maybe bent upward in order to engage the rear of the product containers. In other embodiments, the rear of a pull member may be connected to a larger rear container engagement member.

Referring now to Fig. 1E, which is a top view of the depth adjustment area of the display base, from the rear **90** of the product base there are a series of lines, preferably at 1" intervals. These lines **91, 92, 93, 94, 95** permit the base unit to be bent or cut to a desired width. These depth adjustment lines **91-95** are formed by interrupting the ridge **30** and the divider **20** so that the base may be folded or cut in a straight line across at the desired depth. The lines **91-95** permit the appropriate depth, such as grocery to be selected. Typically the base unit is laid on the shelf backwards, bent at the front edge in a downward motion and then the excess material may be cut such as with a box blade knife. In other embodiments, the depth adjustment lines may be alternated between ridges in order to strengthen the base. In other embodiments, a flat portion of the base is provided at the rear of base so that the removed portion may be bent and inserted so that the flat portion rests beneath the display base.

DETAILED DESCRIPTION OF EMBODIMENT – alternate ridge arrangement

Referring now to Fig. 2A, another embodiment provides a base **12** with a plurality of rows **52** defined by row ridge dividers **20a** and **20b** as shown in more detail in Fig. 2C.

Referring now to Fig. 2B, which is a detailed view of a row divider ridge and support ridges, the outer ridge **32** and the inner ridge **34** define a recess **33**.

Referring now to Fig. 2C, which is a detailed cross sectional view of two rows, each row of this embodiment is defined by a first row ridge divider **20a** and a second row ridge divider

20b. Each row includes a pair of outer ridges **32a** and **32b**, and a pair of inner ridges **34a** and **34b**. A center channel **35** is formed between the inner ridges **34a** and **34b**.

One advantage of multiple ridges is a rib strengthening effect. A second advantage of a center channel **35** is that the center channel may typically be 7/8" wide to provide room for a 3/4" wide pull strap to reside in the channel. As in the previous embodiment, the containers **80a** and **80b** reside on the ridges **32a-b** and **34 a-b** which support the containers off the base so that the pull strap may be placed in the center recessed channel **35**. The ridge dividers **20a-b** keep the containers in the row, and prevent the containers from moving laterally. In this embodiment, the first ridge **32a** has a preferred width of about 0.5 inches.

In many cases, row divider ridges **20a** and **20b** may be designed to fit into the recesses between adjacent rows of merchandise. This type of row division is often desirable in order to conserve valuable shelf space.

In some embodiments these channels between the inner and outer ridge support two-rail pull devices. Referring now to Fig. 2D, which is a cross section view of a two-rail pull device positioned in a row of a base, channel **33a** is located between the left outside ridge **32a** and the left inner ridge **34a**. The left rail **205a** of a two-rail pull member is positioned in the left channel **33a**. Channel **33b** is located between the right outside ridge **32b** and the right inner ridge **34b**. The right rail **205b** of a two-rail pull member is positioned in the right channel **33b**. The two-rail pull member typically includes a rear engagement section such as a plate or bent rails, and a front pull handle connecting the rails.

Referring now to Fig. 2E, which is a cross section view of an alternate two-rail pull device positioned in a row of a base, channel **36a** is located between the left outside ridge **32a** and the left ridge **20a**. The left rail **205a** of a two-rail pull member is positioned in the left

channel 36a. Channel 36b is located between the right outside ridge 32b and the right ridge divider 20b. The right rail 205b of a two-rail pull member is positioned in the right channel 36b.

DETAILED DESCRIPTION OF EMBODIMENT – divider wall inserts

5 Referring now to Fig. 3A, another embodiment of the base unit provides for placement of divider wall inserts 23 into the divider recesses. Multiple rows 54 are provided in the base unit 14. As shown in Fig. 3B, each row includes ridges 32a and 32b on either side of the row dividers 22, and includes a recess 24 for the placement of a divider wall insert 23. This arrangement enables the base unit to be fabricated and the inserts to be chosen depending upon
10 the anticipated product container height or stacked height. In other embodiments, the divider may be flattened and serve as a support ridge, so that additional ridges are not required for the container support.

Referring now to Fig. 3C which is a cross section of the embodiment of Fig. 3A, the row 54 includes a center channel 40 defined by ridges 32a and 32b on either side of the channel. The
15 containers 80 also reside on a flat portion of the ridge dividers 22. The ridge dividers 22 include a recess 24 for receiving a divider wall insert 23. In one embodiment, the distance between the divider wall inserts 23 is 2 3/8" to accommodate soup cans. The divider wall inserts for soup cans are preferably 3/8" tall with 1/8" residing in the gap 24, and an additional 1/4" extending above the top of the ridge divider 22. The top width of the ridges 32a and 32b is typically 1/4"
20 with a 1/4" gap between the ridge dividers 22 and the ridges 32. Eight rows of soup cans may be provided in a base having an overall width of approximately 21.94" inches, which leaves a small base area on either side for placement of an overlapping unit in order to extend the overall width of the display bases.

DETAILED DESCRIPTION OF EMBODIMENT – baby food jar display

Referring now to Fig. 4A and 4B, which is an embodiment specifically for baby food jars **81a-81c**, rows **50** are provided having a width of $2 \frac{5}{16}$ ". The rows include pull strap channels **40** to permit a pull strap **200** to be placed under rows of product container **81b**. The baby food jars are supported above the pull strap channel **40** with raised support ridges **30** which have a preferred height of about $\frac{1}{8}$ ". The pull strap is preferably $\frac{3}{4}$ " wide and .050" thick, and is made of a plastic such as PVC. The support ridges have a width of $\frac{1}{4}$ " and the recessed channel **40** has a width of $\frac{7}{8}$ " to accommodate a $\frac{3}{4}$ " wide pull strap. The ridge dividers **20** have a peak angle of 50° , which represents 25° on either side of a vertical through the apex of the peak. The height of the ridge divider **20** is preferably $\frac{7}{16}$ ". In this embodiment, the ridge dividers are positioned in the space created by the rounded bottom of the baby food jars. In one embodiment, ten rows of baby food containers are provided on a base having an overall width of $23 \frac{1}{8}$ ". The edges of this display base are flat, so that additional base units may be placed in an overlapping manner over the end ridge divider in order to extend the overall width of the display base.

Referring now to Fig. 4C, an alternate arrangement for baby food jars is shown. The center channel **40** and pull strap **200** are defined as before. The ridge dividers in this embodiment include a recess **24** which may receive a tall divider **23** which may be approximately 6" high in order to prevent a stack of three baby jars from collapsing to one side. Alternate tall divider partition heights may be used for alternate container stack heights.

Referring now to Fig. 4D, which is a perspective view of stacked containers such as baby food jars, the tall dividers **23** are shown placed in the divider recess **24**. Stacks of product containers **82a-82c** here are shown at the rear of the display rows **50** and may be pulled forward.

In one embodiment, the pull strap is simply bent upwards to form a rear product engagement member **202** (as detailed in Fig 5). In another embodiment, the rear section of the pull strap is connected to a pusher element **260** in order to engage the stack of containers (as detailed in Fig 6). The containers may be placed within rows with or without divider inserts **23**.

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DETAILED DESCRIPTION OF EMBODIMENT – pull strap

Referring now to Fig. 5A, which is a cross sectional view of a stack of containers such as baby food jars, the rear of the pull strap unit **202** may be bent upward in order to engage the stack of containers. Alternately, a separate pusher element **260** may be attached to the pull strap. The front of the pull strap **201** is bent upward slightly in order to provide a grasping point to pull the product container rows forward. After the units have been pulled to the front of the shelf, the pull strap may be pushed back into the position so that the rear is near the rear of the shelf and the front bend **201** is near the front edge of the display base.

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DETAILED DESCRIPTION OF EMBODIMENT – pull strap with pusher element

Referring now to Fig. 6, which is a perspective view of the attachment of a pusher element **260** to a pull strap **200**, the strap may be placed through notch **262** (not shown) on the back stop and then the pull strap may be bent forward.

15

DETAILED DESCRIPTION OF EMBODIMENT – overlapping base sections

The display base may be provided in a length which will accommodate several rows of merchandise. Display base sections may be partially overlapped to extend the base length on a shelf. In other embodiments, display sections may be arranged side-by-side without overlapping.

20

DETAILED DESCRIPTION OF EMBODIMENT – front stops

Referring now to Fig. 7, which is a perspective view of a section of a baby food jar display, a front stop 300 is provided in order to restrain product containers from being
 5 accidentally pulled out of their display row.

Referring now to Fig. 8, which is a cross section view of a section of a front stop inserted on a display shelf, the stop 300 may clip onto the front portion of the shelf 9.

In one embodiment, the front stop is molded with the base as a hollow wall section. This double wall arrangement provides additional strength to the stop. A slot 302 (not shown) is cut
 10 in the rear wall of the stop, and a larger opening 304 is cut in the front of the stop. A pull strap 200 is placed through the front and rear openings.

In another embodiment, the front stop may be a single wall which is molded with the base unit.

In another embodiment, the front stop may be fabricated separately and then attached to the
 15 base unit as a single stop or as a row of stops.

DETAILED DESCRIPTION OF EMBODIMENT – display base

Referring now to Fig. 9A which is a top perspective view of an embodiment of a display base 16 having a plurality of support ridges 38 with alternating scoring in the rear portion 17b of
 20 the base, the display base has a plurality of ridges 38. The ridges reinforce the base, which may be a relatively thin plastic molded or thermoformed sheet. The ridges also support merchandise to be displayed such as grocery cans, boxes, bottles, or sacks.

Referring now to FIG. 9B, which is a detailed cross section view of the embodiment

shown in FIG. 9A, dividers **26** may be inserted between base ridges **38** in order to create desired product display rows. In this figure a display row is defined as the area between the first divider **26a** and the second divider **26b**.

Referring now to FIG. 9C, which is a detailed cross sectional view of the rear portion of the display base shown in FIG. 9A, the ridges are notched to facilitate cutting the base to a desired shelf depth. In one embodiment, the base includes lateral scoring at the base of the notches so that the base may be more easily bent or cut to a desired depth.

In this embodiment, the notches are made on every other ridge in an alternating fashion. For instance, the first ridge, and other odd-numbered ridges, may be notched at intervals of 18", 20" and 22" from the front edge, notches **39a**, **39b**, and **39c** respectively; while the ridge and even-numbered ridges may be notched at 19", 21", and 23" from the front edge of the base, notches **39f**, **39e**, and **39c** respectively. For instance, if the base were to be cut, 20" from the front edge, the base would be bent along the 20" notches **39b** and corresponding score line and then cut. The notches provide a cutting guide across the base. In this embodiment, the base includes a flat rear portion **17b** which may be removed along with the extra ridge length when the base is cut to the desired depth. The removed portion of the base may be bent and positioned at the rear of the remaining base so that the flat portion rests under the rear of the remaining base.

Referring now to FIG. 9D, which is a top perspective view of the display base of FIG. 9A with a rear portion excess of the base removed and attached to the base, with dividers inserted, and with a pull member. The rear support section **60** is formed by attaching the cut off portion of the base to rear edge of the shortened base. The rear section includes ridges such as **61a**, **61b** which support the divider.

Referring now to FIG. 9F, which is a detailed cross section view of a portion of the rear

of the display base, a hinge line 17c may be included to facilitate bending the rear portion 17b with respect to the front section 17a of the base.

Referring now to FIG. 10, which shows a variety of pull schemes for the display base 16, the base may include pull members such as pull straps 200, springs 270, or elastic bands. Figs 11A and 11B shows a pull member including a pull strap 200 which pulls a rear engagement member 260 forward as the pull strap is pulled forward. Fig 11C shows a spring 270 coiled behind a rear engagement member. Fig 12 shows an elastic band 280 with a rear engagement member 260. The band may be secured by tie points 282b at the rear of the shelf and 282a on the pusher element.

10 DETAILED DESCRIPTION OF EMBODIMENT – extruded display base

FIG. 13A is a top perspective view of the bottom surface of an embodiment of an extruded plastic display base 16 having a plurality of support ridges 38. In one embodiment, the width of the extruded base sections is 4-5 inches. In other embodiments, various section widths narrower or wider than the 4-5 inches may be used as desired. These embodiments are not

15 limited to extrusion manufacturing, but extrusion is typically a low cost method of manufacturing such units in high volume. A manufactured width is typically selected as a tradeoff between extrusion mold costs and the desired application.

Several of the units are typically arranged in an overlapping fashion on a display shelf. The base units may include a lock joint on one or both end rows such that the offset allows one

20 base section to snap onto another base section. FIG. 13B is a detail of one embodiment of a lock joint 400 which snaps over a corresponding lock joint 401 in FIG. 13C. A plurality of these modules may be overlapped in this manner in order to cover a wide display shelf.

The base unit may further include dado or similar cuts 405 in the bottom of the front

portion to accept a front stop that can snap into position on the base.

Referring now to FIG. 14A, which is a detail of a front stop 410, and FIG 14B, which is a side view detail, the front stop may include a vertical retaining member 411 which may include a vertical cutout section 412 to accept a pull member (not shown), a horizontal leg section 413 which may include a cutout section 414 to accept the pull member and a rear base engagement lip 416 which nests in the cutout portion of the bottom base ridges 405.

The base unit may also include cuts 420 at intervals along the in the bottom rear of the base to facilitate cutting the base to a desired shelf depth as discussed in the examples above.

Referring now to FIG. 15, various types of pull devices as illustrated by 430 and 440 may be employed in cooperation with the base. The pull units typically include a handle or front section 431, 441 that may be grasped by a user, at least one elongated member 432, 442 which may be positioned within or substantially within a trough of the base section, and a rear engagement member 433, 443. The rear engagement member may be a bent-upwards portion of the elongated member 443, or may include a plate 433 or additional element affixed to the rear of the elongated member.

Detailed Description of Embodiment- Spring tensioned rear member

In some embodiments, a spring or elastic member may be used to provide a force to assist in drawing items toward the front of a display row.

Referring now to FIG. 16A which is a front perspective view of an active alignment device comprising a housing spring and rear engagement embodiment, the rear engagement section 450 may permit a pull spring 460 to push the display row forward relative to the base unit 16. In one embodiment, one end of a coiled spring 460a is held relative to the front stop 480, and

the other coiled end 460b of the spring is placed behind the rear pull member 450. The rear engagement section may travel in a channel housing 470 which has a first leg 473 inserted in a first groove and a second leg 474 inserted in a second groove of the base 16.

Referring now to FIG. 16B which is a detailed rear perspective view of the rear engagement member and FIG 16C which is a detailed side view, in one embodiment, the rear engagement member 450 includes a first slide member 451 and a second slide member 452 which travel in channel 471 and 472 of the housing. The rear engagement member may include an engagement member 455 and a spring retention member 456. The spring retention member may include a slot 457 for affixing an alternate elastic pull member.

Referring now to FIG. 16D which is a detailed rear perspective view of the front stop 480, the front stop may include projections 482 which can be inserted into grooves of the base 16, a projection 483 which may be inserted into the housing channels 471 and 472, and a front cover plate 481. The front stop may also include a slot 484 for attaching the first end of a coiled spring or elastic member.

In this example, the active alignment device may have a first slide rail 473 which travels in a first trough in the base unit, and a second slide rail 474 which travels in a second trough in the base unit. The pull unit may include a product engagement member 450 spaced apart from a spring engagement member 456. This spaced-apart arrangement provides stability for the rear engagement member. As described above, spring or elastic elements may be provided with a display device to pull forward products arranged in a display row.

Detailed Description of Embodiment- elastic tensioned rear member

In some cases, more force may be required to pull product forward than can be practically

provided with a coil spring and rear sled assembly. Referring now to FIG. 17A which is a front perspective view of an active alignment device with an elastic member, an active alignment device 500 may be positioned in troughs on the base. In one embodiment, the active alignment device 500 includes a slide support frame 470, a front stop 480, a rear band anchor 495, an elastic strip 492 or band, and a rear engagement member 450 which slides in the slide support frame 470. The active alignment device may also include an idler sheave 490 or other device for permitting the elastic band to pull around the front stop. In one embodiment, the first end 493 of an elastic strip 492 is fixed relative to the rear band anchor 495. The elastic strip is wrapped partially around the sheave 490, and the second end of the strip is affixed to the rear engagement member 495 so that as the elastic strip contracts, the rear engagement member 450 is pulled toward the front stop. The slide support frame includes a first lower rail section 473 which is positioned in a first trough in the base unit, and a second lower rail section 474 which is positioned in a second trough in the base unit. In this embodiment, the first lower rail section and the second lower rail section may be snapped into the base section. In this embodiment, the elastic strip forces the rear engagement member forward toward the front stop, thereby aligning items in the display row.

Referring now to FIG. 18, sidewall divider sections such as 501 and 511 may be included with the base. In one embodiment, these dividers have a base portion 502 and 512 which is preferably slightly wider than the trough width in a base section, such that the base portion may be snapped into place in a trough. In one embodiment, the dividers include a wall section 503 and 513 that is thinner than the width of the base portion of the divider, and where the wall is attached to the base portion asymmetrically with respect to the center line of the base portion. This asymmetry permits a divider to be positioned in a first position which is narrower than a

second position as indicated by FIGs 18B and 18C. By selecting either the first orientation or the second orientation for the sidewall divider sections on both sides of a display channel 520, the width of the channel can be adjusted to a desired distance.

For instance, in one embodiment, the base unit has a nominal inside trough diameter of 1/8" and trough depth of about 1/4 inch, and the sidewall divider section has a base section width of about 1/8" to create press fit, and a wall thickness of about 1/16". As illustrated in FIG. 18D, a first wall surface 505 of the sidewall divider section 503 is substantially flush with the first base section wall 504, so that there is an offset distance of about 1/16" from the second wall surface 506 to the second base section wall 507. Therefore when the wall is reinserted into the slot in the second orientation, the width of the display channel 520 is increased by this offset distance. For example in FIG. 18A, the display channel has a first width which corresponds to both dividers being inserted in the same orientation. In FIG. 18B, the display channel has a second narrower width which corresponds to both dividers being inserted where the offsets are oriented outwards. In FIG. 18C, the display channel has a third wider width which corresponds to both dividers being inserted where the offsets are oriented inwards.

These embodiments are examples of the invention and its is evident that those skilled in the art can make variations without departing from the inventive concepts, and the invention should be limited solely by the spirit and scope of the claims.

CLAIMS

What is claimed is:

1. (AMENDED) A product display base for use in manually aligning merchandise on a display shelf, the display base comprising a plurality of overlapping sections, each section comprising:
 - a bottom surface, such that the display base may be placed on the display shelf, and at least a portion of the bottom surface is in contact with the display shelf;
 - a front edge;
 - a first side edge;
 - a second side edge;
 - a rear edge;
 - a plurality of merchandise support ridges, including a first merchandise support ridge and a second merchandise support ridge, such that the merchandise support ridges extend from the proximity of the front edge to the proximity of the rear edge; and
 - at least one pull member channel located between the first merchandise support ridge and the second merchandise support ridge, such that a portion of a pull member may be placed in the channel under merchandise supported by the first merchandise support ridge and the second merchandise support ridge
- ~~2. The display base of claim 1 further comprising~~
~~a plurality of notches in the support ridges, such that display base may be cut in proximity to a notch in order to provide a base of desired display shelf depth.~~
- ~~3. The display base of claim 2 wherein~~
~~there is a third merchandise support ridge, such that the second merchandise support ridge is positioned between the first ridge and the third ridge;~~
~~the notches on the first and third ridge are aligned, such that the base may be cut to a desired depth by cutting through one set of the aligned notches; and~~
~~the notches on the second ridge are offset from the notches on the first ridge and the notches on the third ridge.~~
- ~~4. The display base of claim 1 further comprising a rear backing section which is essentially perpendicular to the display shelf.~~
- ~~5. The display base of claim 4 wherein~~
~~the rear backing section comprises a removed portion of the display base.~~
- ~~6. The display base of claim 1 further comprising~~
~~a front stop on at least a portion of the front edge of the display base.~~
- ~~7. The display base of claim 6 wherein~~
~~the front stop includes a slot, such that the slot is aligned with the pull member channel, and such that a pull member may placed through the slot.~~

8. ~~The display base of claim 1 wherein~~

~~the first and second support ridges at least partially support merchandise in a first row; there is a third merchandise support ridge, such that the second ridge is positioned between the first ridge and the third ridge, and the third ridge at least partially supports merchandise in a second row; and there is at least one row partition insert, such that the row partition insert is inserted between the second ridge and the third ridge in order to separate the first row and the second row.~~

9. ~~A product display base for use in manually aligning product containers on a display shelf, the display base comprising~~

~~a bottom surface, such that the display base may be placed on the display shelf, and at least a portion of the bottom surface is in contact with the display shelf;~~

~~a front edge;~~

~~a first side edge;~~

~~a second side edge;~~

~~a rear edge; and~~

~~a plurality of preformed product container rows, each row comprising~~

~~a first ridge extending from the proximity of the front edge to the proximity of the rear edge;~~

~~a second ridge extending from the proximity of the front edge to the proximity of the rear edge;~~

~~at least one pull member channel located between the first ridge and the second ridge, such that a plurality of products may be placed in the row and a portion of a pull member may be placed in the channel under the products, and the products may be pulled toward the front edge of the display shelf by pulling the pull member which engages the rearmost product and pulls the row of products forward while the products are laterally confined within the row by the first ridge and the second ridge.~~

10. ~~The display base of claim 9 wherein at least a portion of one end of the base is scored so that the base may be bent to a desired shelf depth.~~

11. ~~The display base of claim 9 wherein the first ridge has a recess to receive a row partition insert.~~

12. ~~The display base of claim 11 further comprising a row partition insert, such that the row partition insert is inserted into the first ridge recess.~~

13. ~~The display base of claim 9 wherein the first ridge has a flattened triangular cross section comprising~~

~~a first plateau parallel to the bottom surface plane of the base, such that a portion of a first container in a first row may rest on the first plateau;~~

~~a second plateau parallel to the bottom surface plane of the base, such that a portion of a second container in a second row may rest on the second plateau; and~~

~~a raised portion between the first plateau and the second plateau, such that the raised~~

portion resists lateral movement of the first and second container between the first row and the second row.

14. The display base of claim 9 further comprising

a third inner ridge positioned between the first ridge and the pull member channel;
a fourth inner ridge positioned between the pull member channel and the second ridge,
such that the third and fourth ridges support merchandise in the row, and such that the
first and second ridges are taller than the third and fourth ridges in order to confine
merchandise to the row.

15. The display base of claim 9 further comprising

a first outer ridge positioned between the first ridge and the pull member channel; and
a second outer ridge positioned between the second ridge and the pull member channel.

16. The display base of claim 9 further comprising

a front stop on at least one row, such that the front stop may engage a portion of the first
product in the row thereby restraining the product in the row.

17. The display base of claim 16 wherein

the front stop includes a slot, such that the slot is aligned with the pull member channel,
and such that a pull member may be placed through the slot.

18. The display base of claim 9 further comprising

a plurality of pre-formed bend markings so that base can be bent along a selected bend
marking.

19. A product display system comprised of

a display shelf;

at least one display base section, the display base section comprising

a bottom surface, such that the display base may be placed on the display shelf, and at
least a portion of the bottom surface is in contact with the display shelf;

a front edge;

a first side edge;

a second side edge;

a rear edge; and

a plurality of preformed product container rows, each row comprising

a first ridge extending from the proximity of the front edge to the proximity of the
rear edge;

a second ridge extending from the proximity of the front edge to the proximity of
the rear edge;

at least one pull member channel located between the first ridge and the second
ridge, such that products may be placed in the row and a portion of a pull member
may be placed in the channel under the products, and the product containers may
be pulled toward the front edge of the display shelf by pulling the pull member
which engages the rearmost product and pulls the row of products forward while

the products are laterally confined within the row by the first ridge and the second ridge;
 a plurality of pull members; and
 a first merchandise item positioned in a first row and a second merchandise item
 5 positioned in a second row, such that the second row is adjacent to the first row, and such
 that the second ridge provides a boundary between the first row and the second row.

20. The product display system of claim 19 wherein a pull member of a row is comprised of
 10 an elongated section which rests within the pull member channel;
 a rear product engagement section which is connected to the rear of the elongated section;
 and
 a front pull section, connected to the front of the elongated section, such that the front
 pull section may be pulled outwards away from the front edge of the display shelf,
 15 thereby causing the rear product engagement section to engage the rearmost product in
 the row.

21. The product display system of claim 19 wherein
 the first display base section has a top surface; and
 20 a second display base section overlaps the first side edge of the first display base section,
 thereby extending the display base area.

22. The product display system of claim 19 further comprising
 at least one front stop positioned in proximity to the front edge of a row, such that
 25 the front stop may engage a portion of the first product in the row thereby restraining the
 product in the row.

23. The display base of claim 19 further comprising
 a plurality of pre-formed bend markings so that base can be bent along a selected bend
 30 marking.

24. The product display system of claim 19 wherein the display base section further comprises
 a third inner ridge positioned between the first ridge and the pull member channel;
 a fourth inner ridge positioned between the pull member channel and the second ridge,
 35 such that the third and fourth ridges support merchandise in the row, and such that the
 first and second ridges are taller than the third and fourth ridges in order to confine
 merchandise to the row.

25. The display base of claim 24 wherein
 40 the first merchandise item is a first soup can; and
 the second merchandise item is a second soup can, such that a portion of the second ridge
 is located between the first soup can and the second soup can, and such that when the first
 soup can and the second soup can are in close proximity there is an open area between the
 lower portion of the first soup can and the lower portion second soup can, and the portion
 45 of the second ridge is contained within the open area.

26. The display base of claim 19 wherein

the first merchandise item is a first stack of baby food jars;

the second merchandise item is a second stack of baby food jars, such that a portion of the second ridge is located between first stack and the second stack, and such that the second ridge includes a recess; and

a divider partition such that the partition is inserted into the recess thereby creating a wall between the first row and the second row.

27. A method of displaying product containers on a display shelf the method comprising

positioning a first product display base section on a portion of the display shelf, the display base having a plurality of predefined product container display rows, each row having a first ridge divider, a second ridge divider, a product container channel between the first ridge divider and the second ridge divider, and a pull member channel located between the first ridge divider and the second ridge divider;

placing a first pull member in a first row of the display base section such that the pull member is positioned substantially within the pull member channel of the first row;

placing a plurality of product containers within first row of the display base; and

periodically pulling the first pull member toward the front of the display shelf, thereby engaging the rearmost product container and pulling the row of containers forward while the product containers are laterally confined within the product container channel by the first ridge divider and the second ridge divider, and returning the pull member to its resting position.

28. The method of claim 27 further comprising adjusting the depth of the display base section by

selecting a predefined bend line on the display base section which corresponds to the approximate display shelf depth;

bending the display base section along the selected predefined bend line; and

positioning the bent display base section on a portion of the display shelf.

29. The method of claim 27 further comprising

cutting the display base along the selected predefined bend line; and

positioning the cut display base section on a portion of the display shelf.

30. The method of claim 27 further comprising

placing a second display base section on a second portion of the display shelf such that a portion of the second display base section overlaps a portion of the first display base section.

31. (New) The product display base of claim 1 further comprising

a front stop element which may be positioned in proximity to the front edge of the display base, the front stop element comprising

a front retention member, such that the front retention member may engage an item on the display base to prevent the item from inadvertently being pushed or pulled off of the front

of the display base;
 a base attached to the front retention member and positioned under the display base; and
 a retaining lip integral to the base, such that the retaining lip engages slots provided in the
 bottom portions of a plurality of support ridges on the display base.

5 32. (New) The product display base of claim 1 further comprising
 a first snap feature along the first side edge; and
 a second snap feature along the second side edge, such that the first snap feature of a first
 base section may snap over the second snap feature of a second base section.

10 33. (New) The product display base of claim 1 wherein
 the first and second support ridges at least partially support merchandise in a first row;
 there is a third merchandise support ridge, such that the second ridge is positioned
 between the first ridge and the third ridge, and the third ridge at least partially supports
 15 merchandise in a second row; and
 there is at least one row partition insert, such that the row partition insert is inserted
 between the second ridge and the third ridge in order to separate the first row and the
 second row.

20 34. (New) A product display system comprised of
 a display shelf;
 a plurality of partially overlapping display base sections, each display base section
 comprising
 25 a bottom surface, such that the display base may be placed on the display shelf, and at
 least a portion of the bottom surface is in contact with the display shelf,
 a front edge,
 a first side edge,
 a second side edge,
 a rear edge, and
 30 a plurality of ridges comprising
 a first ridge extending from the proximity of the front edge to the proximity of the
 rear edge;
 a second ridge extending from the proximity of the front edge to the proximity of
 the rear edge;
 35 at least one pull member channel located between the first ridge and the second
 ridge, such that products may be placed in the row and a portion of a pull member
 may be placed in the channel under the products, and the product containers may
 be pulled toward the front edge of the display shelf by pulling the pull member
 which engages the rearmost product and pulls the row of products forward while
 40 the products are laterally confined within the row by the first ridge and the second
 ridge;
 a plurality of pull members; and
 a first merchandise item positioned in a first row and a second merchandise item
 positioned in a second row, such that the second row is adjacent to the first row, and such
 45 that the second ridge provides a boundary between the first row and the second row.

35. (New) The product display system of claim 34 wherein a pull member comprises
an elongated section which rests within the pull member channel;
5 a rear product engagement section which is connected to the rear of the elongated section;
and
a front pull section, connected to the front of the elongated section, such that the front
pull section may be pulled outwards away from the front edge of the display shelf,
thereby causing the rear product engagement section to engage the rearmost product in
10 the row.
36. (New) The product display system of claim 34 wherein
the first display base section has a top surface; and
a second display base section overlaps the first side edge of the first display base section,
15 thereby extending the display base area.
37. (New) The product display system of claim 34 further comprising
at least one front stop positioned in proximity to the front edge of a row, such that
the front stop may engage a portion of the first product in the row thereby restraining the
20 product in the row.
38. (New) The display base of claim 34 further comprising
a plurality of pre-formed bend markings so that base can be bent along a selected bend
marking.
25
39. (New) The display base of claim 34 further comprising
a spring loaded rear engagement member positioned in the first row, such that the rear
engagement member pushes the first merchandise item toward the front of the display
shelf.
30
40. (New) The display base of claim 34 further comprising
an active alignment device positioned in the first row, such that the active alignment
device pushes the first merchandise item toward the front of the display shelf.
- 35 41. (New) The display base of claim 40 wherein
the active alignment device comprises a spring means.
42. (New) The display base of claim 40 wherein
the active alignment device comprises an elastic member.
40
43. (New) The display base of claim 34 further comprising
a first display shelf section comprising
a first snap feature along the first side edge, and
a second snap feature along the second side edge; and
45 a second display shelf section comprising

a first snap feature along the first side edge, and
 a second snap feature along the second side edge, such that the first snap feature
 of the first base section may snap over the second snap feature of the second base
 section.

5 44. (New) The display base of claim 34 further comprising
 a front stop element which may be positioned in proximity to the front edge of the display
 base, the front stop element comprising
 10 a front retention member, such that the front retention member may engage an item on the
 display base to prevent the item from inadvertently being pushed or pulled off of the front
 of the display base;
 a base attached to the front retention member and positioned under the display base; and
 a retaining lip integral to the base, such that the retaining lip engages slots provided in the
 bottom portions of a plurality of support ridges on the display base.

15 45. (New) The display base of claim 34 wherein
 the first row comprises
 a first divider removably positioned between a first ridge and a second ridge; and
 a second divider removably positioned between a third ridge and a fourth ridge.

20 46. (New) The display base of claim 34 wherein the first divider and the second divider further
 comprise
 a base; and
 a partition member integral to the base, such that the partition member is narrower than the
 25 base unit, and such that the partition member is positioned to one side of the midpoint of
 the base, and such that the first divider and second divider may each be positioned with the
 partition member closer to the other divider or further from the other divider, thereby
 permitting the row width to be adjusted by the various orientations of the first divider and
 the second divider.

30 47. (New) A product display base section for use in manually aligning merchandise on a display
 shelf, the display base section comprising:
 a bottom surface, such that the display base may be placed on the display shelf, and at
 least a portion of the bottom surface is in contact with the display shelf;
 35 a front edge;
 a first side edge;
 a first snap feature along the first side edge;
 a second side edge;
 a second snap feature along the second side edge;
 40 a rear edge;
 a plurality of merchandise support ridges, including a first merchandise support ridge and
 a second merchandise support ridge, such that the merchandise support ridges extend
 from the proximity of the front edge to the proximity of the rear edge; and
 at least one pull member channel located between the first merchandise support ridge and
 45 the second merchandise support ridge, such that a portion of a pull member may be

placed in the channel under merchandise supported by the first merchandise support ridge and the second merchandise support ridge

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ABSTRACT

A device, system, and method for manually arranging products on a display shelf. A plastic ridged base may be cut to a desired display shelf width along preformed notches and then be placed on the display shelf. Excess base width may serve as a rear backing element to support row partitions. The ridges support merchandise and permit a pull member to rest between ridges. The pull member may be manually pulled to bring merchandise to the front of a row. The ridges may be universal, or may be of specific dimensions for items such as soup cans or baby food jars. Narrow base sections may be extruded and snapped together to form a desired base unit width. A spring or elastic active alignment device may be used on the base to move display items forward
on a shelf.